CAS 7439-98-7

Substance name Molybdenum & molybdenum compounds

Toxicity

Molybdenum is an essential trace nutrient in humans. Molybdenum compounds have caused reproductive and developmental problems in animal studies.[1-4] Reported effects include male sterility, reduced fetal weight gain, reduced skeletal ossification, and reduced survival of offspring. Evidence from studies in rodents indicates that copper plays a key role in protecting against these effects.[4] A recent study reported an inverse association between background levels of molydenum exposure in men and sperm quality and concentration.[5]

Exposure

Molybdenum is a hard metal widely used to add strength and hardness and retard corrosion in metal alloys. It is used in lubricants, in pigments for ceramics and inks and paints.[7] More recently the semiconductor and battery industry have begun to use molybdenum. Molybdenum was found in a pencil case and school bags in testing of children's school supplies by the Danish EPA.[6] Biomonitoring in the general U.S. population by the Centers for Disease Control and Prevention (CDC) show that levels in the general population dropped slightly from 1999 to 2004.[7]

References

1. "Molybdenum" in REPROTEXT Database Version 5.1 Greenwood Village, CO: Thomson Reuters (Healthcare) Inc. (accessed 2009).
2. National Institutes of Health, National Library of Medicine Hazardous Substances Data Bank http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB Accessed May 2010.
3. U.S. DHHS, PHS, National Toxicology Program. NTP Techical Report on the toxicology and carcinogensis studies of molybdenum trioxide in F344/N rats and B6C3F1 mice (Inhalation studies). April 1997. http://ntp.niehs.nih.gov/ntp/htdocs/LT_rpts/tr462.pdf.
4. Lyubimov, A.V. et al. (2004) The effects of tetrathiomolybdate and copper supplementation on fertility and early embryonic development in rats. *Reprod. Toxicol. Dec 19 (20)*:223-33.
5. Meeker JD et al. (2008) Cadmium, lead, and other metals in relation to semen quality: human evidence for molybdenum as a male reproductive toxicant. *Environ Health Perspect 116(11):* 1473-9.
6. Danish Ministry of the Environment, Environmental Protection Agency. Surveys on Chemicals in consumer products. Report 84. http://www.mst.dk/English/Chemicals/Consumer_Products/Surveys-on-chemicals-in-consumer-products.htm
7. Centers for Disease Control and Prevention (CDC), Fourth National Report on Human Exposure to Environmental Chemicals, December 2009. http://www.cdc.gov/exposurereport/data_tables/.